

(c) REMARKS

The claims are 1-21 with claims 1, 8, 13, 14 and 15 being independent. The claims have been amended to correct certain informalities unrelated to patentability and reconsideration of the claims is expressly requested.

Claims 13-15 have been amended to provide that for discharging ink an energy generating element is employed. Support is found, *inter alia*, on page 20, line 21 to page 21, line 17. The claims have also been amended to provide that the predetermined site is irradiated with light. Support is found, *inter alia*, on page 29, line 21.

Claims 1-7 were rejected as anticipated by Wheeler '709. Claims 8-12 were rejected as obvious over Kubota '107 in view of Wheeler '709. Claim 13 was deemed obvious over Ohkuma, '112 in view of Wheeler. Claim 14 was rejected as obvious over Kubota '643 in view of Wheeler. Claims 15-19 were rejected as obvious over Kubota '107 in view of Wheeler. Finally, claim 20 was rejected as either anticipated by or as obvious over, Ohkuma '112. The grounds of rejection as recited on pages 2-15 of the Official Action are respectfully traversed.

Prior to addressing the grounds of rejection, applicants believe it will be helpful to briefly review certain key features and advantages of the present claimed invention. The present invention is directed to a positive-type photosensitive resin composition. The positive type photosensitive resin composition is irradiated by light and a photoacid compound therein generates acid. Accordingly, the acrylic resin having a carboxylic anhydride structure in the molecule, decomposes.

The acrylic resin is subjected to two different kinds of reaction to promote decomposition. The carboxylic anhydride structure in the acrylic resin undergoes

hydrolytic reaction in the presence of the photo-acid generator to form a carboxylic acid which improves solubility with respect to alkali solution. During hydrolysis the carboxylic anhydride structure is cleaved to form, *inter alia*, a carboxylic acid which improves its solubility in the alkali developer.

In addition, in the acrylic main chain a carbon-carbon bond therein is cleaved by Norrish-type reaction. The polymeric chain is cleaved which reduces its molecular weight, so that the cleaved chain can be more readily dissolved in a solvent. Accordingly, based on the reduction in the molecular weight derived from (a) the main chain cleavage and (b) formation of a carboxylic acid which changes the polarity, the sensitivity of the resin is very high.

In Comparative Example 1 on specification page 60, where a photo-acid generator was not employed, the patterning exposure required 40,000 mJ/cm<sup>2</sup> compared to the patterning exposure of only 100 mJ/cm<sup>2</sup> when the acrylic resin was combined with a photo-acid generator.

With regard to the anticipation rejection of claims 1-7 based on Wheeler, the Examiner's attention is directed to the fact that the present invention is a positive type photosensitive resin composition. The photosensitive resin composition is characterized by the fact that the acrylic resin undergoes a reduction in molecular weight based on (1) main chain decomposition and (2) a change in polarity and reduction in molecular weight due to hydrolysis, as set forth on pages 19 and 20 of the specification. These features are inherently present in the claims since an acrylic resin with a carboxylic anhydride structure is present together with a photo-acid generator.

Wheeler fails to teach a specific positive type photosensitive resin composition with both the instant acrylic resin and a photo-acid generator. In paragraph [0003] of Wheeler an explanation of how a negative-acting photo resist works is provided in which a polymerization or cross-linking reaction occurs. As noted in paragraph [0004] not only a resin binder and a photoactive agent can be present, but, also, a monomer useful in cross linking is also present in order to form a polymerized network. As noted in paragraph [0057] where a negative acting photo resist is employed a cross-linked structure is developed which resists a developer. In paragraph [0048] it is noted that photobase generators or a free-radical generator may be combined in the composition. Therefore, Wheeler is directed to a negative resist composition in which a polymerization reaction occurs, not a decomposition.

In the Examples of Wheeler a negative working photo resist composition is illustrated. An initiator is added to initiate the polymerization reaction. In claim 2, Wheeler specifically claims negative acting photo resists.

Kubota '107, while disclosing a positive-working photosensitive material, fails to teach or suggest use of a photo-acid generator. As shown in present Comparative Example 1, the presence of a photo-acid generator provides significantly unexpected improvements in the efficiency of the present claimed invention as compared to the absence of the photo-acid generator.

The defects and deficiencies of Kubota and Wheeler are not remedied by Ohkuma or Kubota '643.

Therefore, it is submitted that none of the references, whether alone or in

combination, disclose or suggest the present claimed invention or render it unpatentable. Accordingly, it is respectfully requested that the claims be allowed and the case be passed to issue.

Applicant's undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

/Peter Saxon/  
Peter Saxon  
Attorney for Applicant  
Registration No. 24,947

FITZPATRICK, CELLA, HARPER & SCINTO  
30 Rockefeller Plaza  
New York, New York 10112-3801  
Facsimile: (212) 218-2200

FCHS\_WS 1918217\_1.DOC